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Academy of Management Journal (pre-1986); Sep 1975; 18, 000003; ABI/INFORM Global
pg. 520

Expectancy Theory as a Predictor of Work Motivation, Effort Expenditure, and Job Performance

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*The predictive power of expectancy theory with re-
spect to work motivation, effort expenditure, and job
performance is tested in four homogeneous samples. The
base of behavioral alternatives is expanded to include
both approach and avoidance acts. The findings do not
support the classical expectancy model or its components.*

Expectancy theory is a widely researched theory of motivation. Although
its cognitive assumptions limit its explanations to the rational portion of
human behavior, it nonetheless has served as the basis for research in such
diverse areas as decision making (9), learning theory (45), verbal con-
ditioning (6), achievement motivation (2), social power (39), coalition
formation, (51), attitudes (13, 41), and organizational behavior (49).

Industrial and organizational psychologists have built upon the original
Vroom (49) model to describe and predict a wide variety of work related
variables. In a recent literature review, House and Wahba (24) enumerated
the following variables which have been dealt with in various studies: job
effort and job performance (14, 15, 16, 18, 19, 20, 30, 35, 49, 52); job
satisfaction (19, 28, 42, 49, 52); organizational practices (10); managerial
motivation (5); occupational choice (37, 49); the importance of pay and
pay effectiveness (7, 29); and leadership behavior and leader effectiveness
(12, 23).

Such widespread applicability indicates the degree of generality imputed
by theorists to the instrumentality concept. If the primary goals of organiza-

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tions are considered, it may be postulated that the usefulness of the expectancy model in the field of organizational behavior depends on its ability to describe and predict work motivation, job effort, and job performance. Such demonstrated capability would establish expectancy theory as a major conceptual framework for explaining work related behavior.

Recently, three reviews of research based upon expectancy theory (21, 24, 36) have concluded that the magnitude of support for the theory is rather low and that the support is inconsistent from one study to another. Evaluation of prior research (50) has raised several logical and methodological issues whose lack of resolution appears to account for the inconsistent level of support, and for several measurement weaknesses. This paper attempts to deal with some of these logical and methodological issues:

1. The distinction between the concepts of expectancy and that of instrumentality.

2. A reevaluation of the concepts of valence, acts and outcomes to incorporate negative as well as positive valences.

3. Because most prior studies have been limited to positively valent outcomes, they did not provide a complete test of the original expectancy model. This study provides such a comprehensive test of the aggregate model as well as its components.

4. An examination of additional behavior alternatives in the work situation to include both avoidance as well as approach behavior. Certainly among the work alternatives to be considered is the choice of not working hard as opposed to the choice of working hard. Poor performance may be seen as a possible outcome as well as good performance.

5. The distinction between three dependent variables—work motivation, effort expenditure, and job performance.

In addition, this study provides a number of improvements in the measurement of the main constructs of the theory and the criterion variables. To the degree that some of these logical and methodological issues have been successfully confronted, the findings of this study should provide useful input in determining whether expectancy theory is a viable model to predict work behavior.

DEVELOPMENT OF EXPECTANCY THEORY

The central theme of expectancy theory is the rather simple concept that an individual's behavior is a function of the degree to which the behavior is instrumental in the attainment of some outcomes, and the evaluation of these outcomes (31, 48). Historically, this conception of motivation had its origins in the ancient Greek principle of hedonism, which assumes that behavior is directed toward pleasure and away from pain. The individual will choose from alternative courses of action that behavior which he thinks will maximize his pleasure or minimize his pain. The ancient principle was resurrected in the nineteenth century utilitarian philosophy developed by

Jeremy Bentham and John Stuart Mill, and it appeared in the works of the early psychologists (26).

As mentioned earlier, the basic expectancy idea has been used in general psychology for some time. It first was introduced in the organizational context by Georgopoulos, Mahoney, and Jones (16), and since then six of the many models which have been proposed have been widely accepted. These are the models of Vroom (49), Porter and Lawler (42), Graen (19), Campbell, Dunnette, Lawler, and Weick (5), House (23), and Lawler (29). The present study is based on Vroom's model since it is the original version from which the others were developed and modified.

The basic assumptions of the various models in industrial and organizational psychology are:

1. A subjective measure of expectancy and valence
2. Independence between expectancies and valences
3. A multiplicative interaction between expectancies and valences
4. Instrumentality as a determinant of valence.

Vroom (49) proposed three related models: a valence of outcome model, a work motivation model, and a job performance model. The valence of outcome model (generally equated with job satisfaction) states that the valence (or satisfaction) of an outcome is a "monotonically increasing function of the algebraic sum of the products of the valences of all other outcomes and his conceptions of the specific outcome's instrumentality for the attainment of these other outcomes" (49, p. 17). Instrumentality is defined by Vroom as the degree to which a person sees the outcome in question as leading to the attainment of other outcomes. Instrumentality varies from -1 through 0 to $+1$. Symbolically,

$$V_j = \sum_{k=1}^{n} (I_{jk} V_k)$$

where V_j = valence of outcome
I_{jk} = instrumentality of the job for the attainment of the kth outcome
V_k = the valence of outcome k
n = the number of outcomes

The work motivation model states that the force on a person to perform an act is "a monotonically increasing function of the algebraic sum of the products of the valence of all outcomes and the strength of his expectancies that the act will be followed by the attainment of these outcomes" (49, p. 18). Expectancy is defined as the subjective probability that a given act will be followed by a given outcome and varies between 0 (certain nonoccurrence) and 1 (certain occurrence). Symbolically,

$$F = \sum_{j=1}^{n} (E_{ij} V_j)$$

where F = the force to perform an act
E_{ij} = the expectancy that act i will be followed by outcome j
V_j = the valence of outcome j
n = the number of outcomes

The Vroom model postulates performance to be job effort multiplied by ability. Arvey and Dunnette (1) argue that an additive relationship between ability and expectancy perhaps is a better predictor of performance than is a multiplicative one. Since findings on this point are inconsistent and since the addition of the ability variable would present more methodological problems without resolving any conceptual ones, it was decided for this study to predict performance from the motivational component of expectancy theory without the use of an ability measure. This decision is consistent with the practice of most reported research in this area (19, 20, 27, 42). The effect of the omission of the ability dimension should be borne in mind as the findings on job performance are reviewed.

The original Vroom model has been modified by subsequent researchers in three aspects:

1. First-level and second-level outcomes have been distinguished. The first-level outcome refers to the level of performance resulting from a given amount of effort, whereas the second-level outcome is defined as the reward or penalty obtained as the result of the level of performance or, as tested in some studies, as the result of the effort expended.

2. Intrinsic sources of valence have been identified. These include the degree of satisfaction or pleasure the individual receives from the activity or work behavior itself regardless of the outcome, as well as the degree of satisfaction or pleasure the individual derives from the accomplishment of the work goal regardless of extrinsic rewards.

3. Expectancy 1 and Expectancy 2 have been introduced as separate variables. Expectancy 1 is defined as the perceived belief that effort will lead to performance or to second-level outcomes. Expectancy 2 is the perceived belief that performance will lead to second-level outcomes.

HYPOTHESES

Despite the undisputed injunction of the theory that instrumentality be measured on a scale ranging from -1 to $+1$, most prior studies, yielding to methodological difficulties, have operationalized instrumentality as Expectancy 2, which is defined as a subjective probability and is measured on a scale from 0 to 1. As Wahba and House (50) point out, "If instrumentality takes on values from -1 to $+1$, the predictions with respect to avoidance (negative instrumentality) are different than if instrumentality is allowed to range from zero to one." Thus, allowing instrumentality to range from -1 to $+1$ has very substantive and logical implications for the theory.

Although a few studies have dealt with avoidance behavior (14, 44), the range of behaviors and first-level outcomes considered in most prior re-

search has been limited to positively valent acts and outcomes. Certainly among the behavior alternatives an individual on the job may consider is the choice of not working hard as compared to the choice of working (22), and poor performance may be seen as a possible first-level outcome as easily as good performance. A major component of the theory of achievement motivation (2, 3, 33) is the individual's disposition to avoid failure, which certainly assumes consideration of poor performance as a possible outcome. Yet expectancy theorists, methodologically bound by the (positive) probability scale of Expectancy 1 and by the difficulties of operationalizing negative instrumentality, have excluded from their tests of the theory a substantial portion of possible behavior and outcome alternatives. Support of the expectancy model certainly should be strengthened if it can be shown to be a strong predictor of a broad range of behaviors and first-level outcomes. It is therefore hypothesized that:

Hypothesis 1: Job effort will be more highly correlated with the degree to which an act is instrumental to the attainment of valued outcomes and to the avoidance of undesirable outcomes than with the degree to which the act is perceived to lead only to the attainment of valued outcomes.

Hypothesis 2: Job performance will be more highly correlated with the degree to which effective performance is instrumental to the attainment of valued outcomes and to the avoidance of undesirable outcomes than with the degree to which effective performance is seen to lead only to the attainment of valued outcomes.

METHOD

Measures

1. *Outcomes*—Expectancy theory is an individual theory of motivation which assumes outcomes chosen by the individual. Mitchell (34) points out that practical considerations and control problems usually dictate outcomes selected and controlled by the investigator in contradiction to the requirements of the theory. In order to overcome this difficulty, a comprehensive list of outcomes was compiled from previous studies in the field. Since these studies had largely ignored negative outcomes, the literature in the areas of conflict, fear of failure, and anxiety was reviewed and additional outcomes were added from these sources. To conform further to the requirements of the theory, the questionnaire was designed to permit the subject to add any positive or negative outcomes which were important to him and which did not appear on the submitted list. The use of a preselected but open-ended listing of outcomes thus provided a good approximation of the subject's own outcomes without incurring excessive loss of control.

Although some 45 percent of the respondents took advantage of the opportunity to add to the list of outcomes, in all cases the new information was a rewording of a previously listed outcome. Thus not one additional out-

come was added to the original list. It may be surmised that researchers have covered the field of job related outcomes fairly completely, and that a well-designed preselected list of outcomes does not violate the requirements of the theory.

2. *Valence of Outcomes*—The preferences that individuals have toward outcomes, rewards, and events are referred to as the attraction, valence, or value of rewards and outcomes. Most previous studies have measured these preferences through some form of an importance index for outcome valence (12, 16, 19, 42). Mobley (38) indicates several problems related to these outcome measures:

(a) It is assumed that all outcomes are relevant to the subject.

(b) Previous studies usually failed to consider negative outcomes.

(c) The use of importance as the dimension of valence measures the intensity of the preference but not its content, i.e., *what* the person values. The measure should reflect both content and intensity.

Following the lead of Mobley (38) and Galbraith and Cummings (14), a scale of desirability was used to measure the valence of outcomes in this study. For each outcome, the subject was asked to indicate whether it was:

Very desirable
Desirable
Does not matter
Undesirable
Very undesirable

These outcome desirability ratings were designed to avoid the problems mentioned by Mobley. The scale consisted of 29 items.

3. *Expectancy-Instrumentality Measure*—An Expectancy Questionnaire was used to measure the degree of expectancy of the employee that his effort would lead to good performance or to a second level outcome (Expectancy 1) and that good performance would lead to second level outcomes (Expectancy 2). As designed by Evans (10), the items are worded to elicit a set of responses ranging from "Definitely not true of my job" to "Extremely true of my job." Examples of the items used were:

"The harder I work, the more I produce."
"There are no rewards for working hard in this company."
"Poor job performance may get me fired."
"Improving my performance will lead to my making more money."

The scale consisted of 39 items, 29 of which were designed to match specific items in the Outcome Desirability scale.

4. *Rating Forms*—The questionnaire included a self-rating form consisting of seven items. The first three items were a self-rating report of job performance developed by Porter and Lawler (42). The scale dealt with three dimensions of performance: quality of performance, productivity of

performance, and amount of expenditure of effort on the job. Porter and Lawler's scale has a reasonably high level of reliability. The other four items were a self-rating of work motivation developed by Patchen (40). This scale has been used in a number of studies and has shown a high validity measured against absence rates, supervisory rating, and volume of production (40). The test-retest reliability coefficient for Patchen's scale is .80 for individuals and .83 for group scores.

The supervisor of each respondent was asked to complete a Superior Rating Form for each subordinate. The rating form consisted of six items. The first three items were the Porter and Lawler scale described above, and the last three items were the first, second, and fourth items of Patchen's work motivation scale. Patchen's third item could not readily be reworded for response by a superior.

5. *Criterion Measures*—The following dependent variables were measured: effort expenditure, job performance, and work motivation. It should be noted that work motivation is considered as an independent criterion separate from performance in accordance with Vroom's original formulation. These variables were measured by various means as shown in Table 1.

TABLE 1

Measurement of Dependent Variables

	Self-Rating	Superior Rating	Objective Measure
Effort		X	
Performance		X	X
Work Motivation	X	X	

Ratings by superiors were chosen in preference to self-rating scores due to the generally inferior results achieved by self-rating measures in the literature. However, in view of the high levels of validity and reliability shown by the Patchen scale, the self-rating measure of work motivation is presented as well.

The following scales were used for each dependent variable:

(a) *Effort expenditure:* The sum of Item 3 from the Porter and Lawler scale measuring the amount of expenditure of effort on the job and Item 4 from the Patchen scale comparing the effort of the employee with that of his co-workers.

(b) *Job performance:*
Judgmental measure—the sum of Item 1 from the Porter and Lawler scale measuring the quality of performance and Item 2 from the same scale measuring the quantity of performance.
Objective measure—based on percentage of quota achieved.

(c) *Work motivation:*
Self-rating measure—Index A of the Patchen scale consisting of

Items 1 and 2; Index B consisting of all four items of the Patchen scale; and Index C consisting of Items 1, 2 and 3 of the Patchen scale.

Superior rating measure—a factor analysis was run on the Superior Rating form showing that all items were measuring one factor. This factor is identified as work motivation.

Sample

Questionnaires were mailed to the sales forces of four industrial organizations. The sales function was selected in order to facilitate the compilation of objective performance data. However, such objective measures could not be obtained from two of the four companies and were received for only a portion of the participants in the other two companies.

The four companies are manufacturers of consumer products, and their volumes vary from annual sales of $30 million to $250 million. Compensation plans for the sales personnel ranged from straight commission to salary plus incentive to straight salary. A statistical breakdown of the sample groups is presented in Table 2.

TABLE 2

Composition of Sample Groups

Company	Total Sales Force	Responses Received	Valid Questionnaires	Percent of Total
A	404	256	232	57.6
B	96	61	52	54.3
C	46	37	37	58.8
D	45	28	27	60.0
Total	591	382	348	58.8

Procedure

1. The data used in this study were tested for reliability either through Kuder-Richardson Formula 20 with a Spearman-Brown Prophecy Formula Correction or through Coefficient Alpha with a Spearman-Brown Prophecy Formula Correction. The nature of the scale determined which of the two procedures was adopted. The Outcome Desirability scale called essentially for a dichotomous type of response. The split-halves technique of K-R 20 was thus deemed appropriate for estimating the reliability of this scale. On the other hand, Coefficient Alpha was used in the case of the various expectancy scales and the Superior Ratings where Likert-type measurements were involved. Due to the relatively small number of items in these scales, the Spearman-Brown Correction values are reported to indicate the maximum reliabilities that would be achieved if the scales were lengthened. The scale reliabilities are presented in Table 3.

2. The questionnaires were mailed to the home addresses of each sales employee in the four participating companies. A covering letter was attached

TABLE 3

Scale Reliabilities

Scale Tested	Number of Items	N	K-R20	Spearman-Brown Correction	Coefficient Alpha	Spearman-Brown Correction
Job characteristics	39	317			.64	.78
E1-Positive	11	344			.67	.80
E2-Positive	8	342			.52	.68
E1-Negative	7	334			.47	.64
E2-Negative	13	335			.66	.79
Outcome desirability	29	345	.81	.89		
V Positive	14	348	.69	.82		
V Negative	15	345	.67	.80		
Superior rating	6	347			.77	.87

to each questionnaire signed by the chief sales executive of the organization. The letter explained the purpose of the questionnaire, emphasized its confidentiality and voluntary nature, and urged the cooperation of the recipients.

3. The method of scoring used was as follows:

(a) Outcome Desirability Scale

Rating	Value Applied
Very desirable	3
Desirable	2
Does not matter	1
Undesirable	2
Very undesirable	3

In evaluating the alternative methods of scoring this scale, the crucial problem of operationalizing negative instrumentality was confronted. The use of negative values was considered and rejected because of the complexities resulting from combining valence and expectancy values in both additive and multiplicative relationships. The use of low to high values (1 to 5 or 1 to 7) was considered and rejected because it violated the equal weighting assigned to very desirable and undesirable outcomes. The method finally chosen avoided both complexity and ambiguity. A positive instrumentality or expectancy was defined as the probability of a positive relationship between the act and the outcome or between the first-level and the second-level outcomes. A negative instrumentality was defined as the probability of a negative relationship between the act and the outcome or between the first-level and the second-level outcomes. Thus if a respondent reported good performance as positively valent to him and poor performance as negatively valent, the following statements would be identified as positive relationships:

1. Working hard leads to good performance.
2. Not working hard leads to poor performance.

In similar fashion, the following statements would be identified as negative relationships:

3. Working hard does not lead to good performance.
4. Not working hard leads to good performance.

Within the framework of these definitions, it was possible to assign algebraically positive values to undesirable outcomes. The algebraically positive sum of the negative relationships relevant to each predictor model was then subtracted from the sum of the items with positive relationships to arrive at a net predictor score. This approach offers a viable means of operationalizing instrumentality on a scale from -1 to $+1$ and reconciles the concept of expectancy as a probability estimate and instrumentality as a correlation between act and outcome. Furthermore, the technique justifies the labelling of the expectancy variable as E1 and E2 as found in the literature since it employs probability of both positive and negative relationships. There is no danger of misunderstanding with this methodology since positive and negative relationships are clearly identified for the respondent and the researcher.

(b) Job Characteristics Scale

Low to high values of 1 to 7 were applied.

(c) Rating Forms

Low to high values of 1 to 5 or 1 to 7 were applied.

4. The data were analyzed by correlating the aggregate predictor measure, i.e., E1 (E2V), with the criteria measures. A regression analysis was then run with the predictor measure and the individual components of the predictor measure as the independent variables and work motivation as the dependent variable. Figure 1 summarizes in matrix form the statistical analyses that were performed and indicates the specific variables analyzed in each indicated table.

FIGURE 1

Statistical Analyses

	Acts and Outcomes	Criteria		
		Effort Expenditure	Job Performance	Work Motivation
Predictor	Positive	Table 4 (A)	Table 4 (A)	Table 5 (A)
	Negative	Table 4 (A)	Table 4 (A)	Table 5 (A)
	Positive Plus Negative	Table 4 (A)	Table 4 (A)	Table 5 (A) Table 6 (B)

(A) Correlation Analysis
(B) Regression Analysis

RESULTS

Table 4 presents the results of the correlation between job effort and performance and the aggregate expectancy model. For each dependent variable, three correlation coefficients are listed. First there is the coefficient obtained from scoring only the positive acts and outcomes included in the questionnaire. The second coefficient was calculated by scoring only the negative acts and outcomes included in the questionnaire. Finally, the total score represents the algebraic sum of both positive and negative acts and outcomes.

As shown in Table 4, the predictions of expectancy theory are supported in some samples but not in others. The correlations between the expectancy model with effort and performance is, generally, significant in the total sample ($p < .05$). However, the support for the theory is rather weak and is not consistent from one company to another. Further, the inclusion of both negative and positive outcomes does not seem to improve the predictive power of the theory.

It may be seen in Table 4 that the highest correlation coefficient attains a value of only .28. This means that at best the expectancy model accounts for less than 10 percent of the variance in effort and performance, and in most cases for only 1 percent to 5 percent of the variance. The table also reveals that in no case were the coefficients significant for three of the four sample companies. Finally, neither of the hypotheses tested in this study was supported. There were no statistically significant differences between the coefficients calculated from only the positive acts and outcomes and those derived from both positive and negative acts and outcomes. In fact, in all

TABLE 4

Correlation Between Effort and Performance and the Aggregate Expectancy Model

	Total Sample	Company				
		A	A Division 1	B	C	D
N =	348	232	115	52	37	27
I. Superior Rating of Effort						
Positive	.14**	.16*	.28**	.10	.25	−.25
Negative	−.06	−.03	.01	−.17	−.17	−.21
Total	.11*	.11*	.21*	.15	.26	−.02
II. Superior Rating of Performance						
Positive	.14**	.17**	.26**	.05	.25	−.06
Negative	−.11*	−.10	−.05	−.23	.05	−.23
Total	.13**	.15*	.17*	.05	.12	.15
III. Objective Measure of Performance						
Positive	.004	−.08	−.06	—	—	.21
Negative	.04	.03	.09	—	—	−.09
Total	.05	−.01	−.05	—	—	.25

* Significant $p < .05$
** Significant $p < .01$

cases where significant coefficients were obtained, differences were opposite to the hypothesized direction. The lack of any significant results from the objective performance measure should be noted.

Table 5 presents the results of the correlation between the work motivation measures and the aggregate expectancy model. There was only one coefficient higher than .30 on the superior rating criterion, and the only coefficients higher than .30 on the self-rating measure came from Companies B and C. Thus, as was the case with effort and performance, the support for the theory as a predictor of work motivation must be regarded as weak and inconsistent from one company to another.

To determine the amount of variance accounted for by the major components of the expectancy model, a series of regression analyses was performed. It was recognized that there was a good deal of commonality among the variables, and an attempt was made to minimize the effect of this multicollinearity by limiting the number of highly interdependent variables in specific runs and by "forcing" certain variables to be considered before others.

As may be seen from Table 6, the variables in the study had no predictive power for the total sample, since the aggregate model plus the individual components of the model accounted for only 2½ percent of the total variance. However, the table also reveals the dramatic change when the individual sample groups were analyzed. It is obvious that Company A

TABLE 5

Correlation Between Work Motivation and the Aggregate Expectancy Model

	Total Sample	Company				
		A	A Division 1	B	C	D
$N =$	348	232	115	52	37	27
I. Superior Rating of Work Motivation						
Positive	.15**	.18**	.32**	.10	.26	−.08
Negative	−.08	−.05	−.03	−.21	−.09	−.20
Total	.12*	.13*	.24**	.10	.23	.10
II. Self-Rating of Work Motivation						
A. Index A						
Positive	.12*	.10	.22**	.20	.26	.00
Negative	−.03	−.02	.02	−.14	−.16	.31
Total	.13**	.11*	.21**	.27*	.25	−.09
B. Index B						
Positive	.20**	.17**	.26**	.38**	.30*	−.09
Negative	.01	.03	.08	−.13	−.08	.24
Total	.16**	.13*	.17*	.38**	.29*	−.11
C. Index C						
Positive	.16**	.13*	.24**	.36**	.25	−.10
Negative	−.03	.01	.06	−.15	−.26	.24
Total	.15**	.10	.17*	.37**	.36*	−.17

* Significant $p < .05$
** Significant $p < .01$

TABLE 6

Regression Analysis of the Expectancy Model Components with Work Motivation as the Dependent Variable (Variables Forced)

		Company				
		A	B	C	D	Total
	N =	203	44	34	22	303
Independent Variable				R-Square		
E1		—	.01	.12	.002	.001
E2		.01	.02	.25	.005	.015
V		—	.03	.04	.485	.008
E1 (E2V)		—	.02	.03	.035	.001
		.01	.08	.44	.527	.025

dominated the total sample results. As the N of a sample group decreased, the portion of total variance explained increased significantly. The differences among the sample sizes obviously affected the coefficient levels. However, the reported differences were tested for statistical significance. In addition, the pattern of some of the differences could not be explained solely by sample size, as in the case of E1 and E2. E1 and E2 had R-square values of .12 and .25, respectively, for Company C, although they were insignificant for the other groups. V accounted for 48.5 percent of the variance in performance for Company D.

Clearly the most important findings to emerge from the series of regression analyses were:

1. The results are inconsistent from company to company. As a result, it appears that some combination of environmental and demographic differences in the various sample groups is a far more accurate predictor of work motivation than is the aggregate expectancy model or its components.

2. The aggregate model added only from 2 to 3½ percent of the variance when the individual components were forced to emerge first. This does not indicate a very significant predictive power for the classical model.

3. Although most prior studies have not found valence to be a predictor of work motivation, there apparently are certain sample groups where preferences possess such predictive power.

The complete lack of significance of objective performance as a criterion measure merits comment. It will be recalled that this measure was obtained only from Company A and Company D but, due to the problem of sample size, it could be tested only for Company A, Company A—Division 1, and the total sample. Within these three groups, the measure was correlated with the predictor model and failed to record significant results.

In an intercorrelation run with the other performance variables, the objective performance measure correlated .32 with the productivity of

performance item and .23 with the sum of the two performance items in Division 1 of Company A. It achieved no significant correlation with these items in Division 2.

Since the findings in this study indicate weak results with the judgmental performance measures used and no significant results at all with the objective performance measure, one may ask whether the objective performance measure is in fact a more accurate measure than the rating scales. If it is, expectancy theory is not predicting true performance, but the individual's perception of it. If the objective performance measure is in effect less valid than the perceptual measures, the measurement problem of this vital criterion is thereby compounded. Prior studies in expectancy theory have not addressed this problem.

DISCUSSION

A major purpose of this study was to provide a more comprehensive test of expectancy theory than has hitherto appeared in the literature. To accomplish this objective, the major components of the theory were subjected to a rigorous analysis of their conceptual frameworks. The analysis led to a reformulation of the theory to broaden the base of behavior alternatives available to the individual in a work situation by including both approach and avoidance acts and to incorporate both positively and negatively valent first-level and second-level outcomes. This expansion of the domain of the major constructs of the theory permitted the study of various combinations of both positive and negative relationships between acts and outcomes and between first-level and second-level outcomes.

Another element of the design which contributed to the comprehensiveness of the study was the inclusion of four sample groups from four different industrial organizations. The samples varied in size from 27 to 232. The total of all the samples amounted to 348 respondents. To provide comparability of data, the sample groups consisted of only one occupational group, sales representatives. Finally, the theory was tested with regard to three main dependent variables: effort expenditure, work motivation, and job performance.

The findings showed no support for either the Vroom expectancy model or its components. The hypotheses of this study have not been supported. The variations that existed appeared to be a function of the sample group rather than of the model or its individual components. The regression analysis confirmed the importance of the environmental differences within the sample groups. For example, E1 and E2 accounted for less than 2 percent of the variance in Companies A, B, and D, but did account for 12 percent and 25 percent, respectively, of the variance in Company C. V accounted for 4 percent or less of the variance in Companies A, B, and C, but accounted for 48.5 percent of the variance in Company D. It is clear that the strength of the theory and the variables within it depends in large measure upon differences among the sample groups. Thus in future research

other factors should be considered, such as individual and environmental moderators. It also appears that the widely accepted aggregate model is no better than, and in certain circumstances is considerably inferior to, the individual components within the model.

Previous studies have produced inconsistent results regarding the formulation of the predictor model. Hackman and Porter (20) found that an additive combination, i.e., $E1 + (E2V)$, yielded lower correlations than a multiplicative predictor, i.e., $E1 (E2V)$, while Pritchard and Sanders (44) reported that the multiplicative relationships predicted no better than did the additive relationship. The lack of any predictive power of the multiplicative model used in this study implies a rather low status for both the additive and the multiplicative relationships, whichever of the conclusions in the two reported studies turns out to be correct. The point may, in fact, be moot since a multiplicative relationship becomes additive with a logarithmic transformation of the variables.

Several researchers have found E2 alone to be a strong predictor of performance. These studies include those of Georgopoulos, Mahoney, and Jones (16), Galbraith and Cummings (14), Mitchell and Knudson (37), Pritchard and DeLeo (43), and Schwab (46). The findings in the present study are not supportive (except for Company C) of these researchers, and agree rather with Arvey and Dunnette (1) and Shapiro and Wahba (47), who did not find E2 to be related to performance.

The findings in this study confirm the conclusions of House, Shapiro, and Wahba (25), who, after reviewing 31 studies in the field, found that the promise of the theory shown by earlier studies had been compromised by the inconsistent magnitude of support revealed by more recent findings. When one considers the inconsistency of the findings of this body of studies, it seems obvious that no fruitful developments can be expected from further research dealing exclusively or even primarily with the original variables of the theory without resolving the basic logical and methodological issues underlying the theory (50). In the face of the dubious validity of several of the assumptions of the theory (i.e., the rationality assumptions, optimization as a choice criteria, lack of independence between variables, etc.), the failure to achieve conceptual clarification of the major constructs of the theory, and the difficulties experienced in the area of operationality and measurement, the findings of the study point to the theory's ability to explain at best a very limited portion of human behavior. It may be that the theory, founded on considerations of rationality, can serve as a useful predictor in situations where contingencies between acts and outcomes and between first-level and second-level outcomes are clearly perceived by the individual, whereas ambiguous situations force the individual to develop a choice mechanism not based on the expectancy variables. In short, the earlier optimism for the universality of the theory appears to have been dashed, and the need for a more limited perspective is indicated.

Within the restricted domain where the theory may operate well, resolu-

tion of some of the methodological difficulties referred to earlier may enhance the understanding of motivation to work under specified conditions. In this limited area, this study has demonstrated a method of retaining the distinction between first and second-level outcomes and measuring both positive and negative relationships in terms of subjective probability without the necessity of establishing an artificial distinction between expectancy and instrumentality. This resolves both the logical and the methodological inconsistencies in the theory insofar as expectancy and instrumentality are concerned. Within this framework, the findings of the study point to the need for further research, specifically in the area of individual and environmental differences.

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